Green
Environmental
Services, Inc.

3851 River Ridge Drive NE
PO Box 9007
Cedar Rapids, IA 52409-9007

319/395-0578
fax 319/395-9410
wats 1-800/728-0578

## OWNERSHIP OF DOCUMENTS



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# Revised
# CLOSURE PLAN
# FOR
# CHROMIC ACID TANK
# AND
# CHROMIUM HYDROXIDE SLUDGE STORAGE AREA

**Fansteel/Wellman Dynamics**
**P.O. Box 409**
**Creston, Iowa 50801**
**EPA ID: IAD 065218737**

**11 August 1992**

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am duly registered as a Professional Engineer under the laws of the State of Iowa.

Gene H. Fritch, P.E.
Iowa Registration No. 6867

11 August 1992

My registration expires December 31, 1993.

Carol E. Wilson, E.I.T.

11 August 1992

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## 1.0 INTRODUCTION

This Closure Plan is being submitted by Fansteel/Wellman Dynamics (Wellman) in accordance with Subpart G of 40 CFR Part 265 as an interim status hazardous waste storage facility. The plan describes the steps to be taken to close a waste chromic acid tank and a waste chromium hydroxide sludge storage area. This Closure Plan has been devised to ensure that neither hazardous waste storage unit, when closed, will present a threat to human health or the environment.

Wellman operates an aluminum and magnesium foundry. Hazardous waste is generated during foundry operations. Chromium hydroxide sludge and chromic acid are classified as hazardous waste due to heavy metal toxicity and are identified by EPA waste code D007. The waste chromium hydroxide sludge was formerly accumulated in 55 gallon drums and stored on a concrete pad while awaiting transportation to a permitted hazardous waste management facility. Storage at this location is known to have exceeded 90 days. The sludge is currently accumulated in a 20 cubic yard container provided by the disposal company. The drum storage area is no longer in use.

Waste chromic acid was accumulated in a 5,000 gallon tank. Waste will be removed at the beginning of closure activities. When closure is certified, the waste tank will no longer be used for waste chromic acid storage.

## 2.0 HAZARDOUS WASTE MANAGEMENT UNIT DESCRIPTION

### 2.1 Waste Chromic Acid Tank

Spent acids, including hydrofluoric, nitric, sulfuric, and hydrochloric acids are treated on-site to remove the characteristic of corrosivity and released from the wastewater treatment unit at this facility. Spent chromic acid was not treated on-site, but was accumulated in a 5000 gallon tank. This waste was previously removed from the tank and transported to a permitted hazardous waste management facility for disposal at intervals of approximately 90 days. Past management practice did not provide for 90-day intervals. Exceedence of the 90-day storage time limit subjects this unit to closure requirements. Current operation allows the waste chromic acid to be treated on site rather than accumulated and transported.

As noted on the facility drawing, Figure 1, in the Appendix the waste tank is situated 40 feet north of the main production plant and 8 feet east of the metal scrap storage shed. The tank is constructed of polypropylene plastic and is located inside a concrete containment structure. The containment is lined with a 20 mil plastic coating. All materials of construction utilized for storage of waste chromic acid have been designed to be impermeable for an indefinite period of time, but not less that five years. The maximum volume of waste chromic acid in inventory at any time will not exceed the volume of the accumulation tank (5000 gallons).

## 2.2 Chromium Hydroxide Sludge Storage Area

Chromium hydroxide sludge was accumulated in 55-gallon drums and stored on a concrete slab, 51' x 25', located north of the Main Building at the facility as noted on Figure 1 in the Appendix. The drums were provided with lid protectors and placed on the concrete pad. The maximum volume of sludge on site at any time was 24 cubic yards (85 drums).

Chromium hydroxide sludge is no longer accumulated in drums. The waste is now accumulated in a 20-cubic yard container provided by a disposal company. Waste is removed from the facility at intervals of 90 days or less. All drums have been removed and properly disposed at a permitted hazardous waste management facility. The former sludge storage area is no longer active. However, because storage on the concrete pad exceeded the 90-day storage time limit, the area is subject to closure requirements.

## 3.0 CLOSURE PERFORMANCE STANDARDS

The closure of the hazardous waste management units at Wellman is intended to be a clean closure, with all hazardous waste removed from the site and no requirement for post-closure monitoring. Clean closure requires demonstration that any hazardous substances remaining on site do not pose a threat to human health or the environment. This demonstration can be made by ensuring that on site concentrations of hazardous substances are at or below regulatory or health-based standards.

TABLE 3.1

SOIL CLOSURE PERFORMANCE STANDARDS
AND RINSATE TARGET LEVELS

| PARAMETER | SOIL | RINSATE | METHOD |
|---|---|---|---|
| Chromium | 100.0 ppm | 0.1 ppm | SW-846 Method 6010 |
| pH | > 2.0 <12.5 | > 2.0 <12.5 | |

## 4.0 CLOSURE PROCEDURES

### 4.1 Waste Chromic Acid Tank

Waste liquid, sludge, and residue will be pumped from the tank and treated in-house. The tank interior will be triple rinsed with 500 gallon aliquots of water (10% of the tank volume) using a power washer. The plastic liner inside the concrete containment will also be rinsed and the liquid collected with a wet vacuum, after which the liner will be removed. All rinses will be collected and treated in-house. A sample from the third rinse will be analyzed. If the third rinse contains chromium above 5.0 ppm, the tank will be rinsed again, rinsate tested, and so on, until a rinse water meeting the closure performance standard is obtained.

Between each rinse cycle, the wet vacuum hose and reservoir will be decontaminated with detergent and water, then triple-rinsed to prevent cross contamination. The liquid from this activity will also be treated on-site.

Soil underlying the containment basin will be sampled in two locations at depths of 0-6", 6-12", and 12-18" by coring through the concrete with a 4" diameter carbide-tipped core drill. Soil will be removed with a stainless steel auger and analyzed for chromium. The sampling points will be located north and south of the tank within the containment diking as shown in Figure 2 in the Appendix (proposed borings B-7 and B-8). Actual locations will be determined on site, with placement near joints or cracks in the concrete if possible.

Samples from each discrete soil interval at each location will be placed in 4-ounce glass jars supplied by a laboratory, labeled, and placed in coolers with cold pack for transportation to a laboratory. Samplers will wear disposable latex gloves, changing gloves between each sampling interval.

Liquid samples will be placed in untreated plastic quart jars supplied by a laboratory, labeled, and placed in coolers with cold pack for transportation to a laboratory.

When the tank, containment, and surrounding area have been certified as clean, the unit will no longer be used for accumulation of waste chromic acid.

## 4.2 Chromium Hydroxide Sludge Storage Area

The concrete pad will be cleaned with a power washer and non-foaming detergent to remove any surface contamination. The wash solution and three rinses will be collected with a wet vacuum and all liquids treated in-house. The third rinse will be sampled and analyzed for the parameters listed in Table 3.1. The concrete surface will be considered non-hazardous if the final rinsate meets the Closure Performance Standards.

Between each rinse cycle, the wet vacuum hose and reservoir will be decontaminated with detergent and water, then triple-rinsed to prevent cross contamination. The liquid from this activity will also be treated on-site.

Soil samples will be collected at three locations under the concrete pad and at three locations down-gradient with respect to surface runoff from the pad, as shown in Figure 3 in the Appendix (proposed borings B-1 through B-6).

The soil samples will be collected from under the pad by coring through the concrete with a 4" diameter carbide-tipped core drill. A stainless steel auger will be used to remove soil from each core location from depths of 0" to 6", 6" to 12", and 12" to 18" measuring from the bottom of the slab. Where possible, sample locations will be selected next to cracks, joints, or fissures in the concrete surface.

Down-gradient soil samples will be collected from two locations immediately adjacent to the east edge of the concrete pad and from one location further down-gradient. A stainless steel auger will be used to collect soil from depths of 0" to 6", 6" to 12", and 12" to 18".

Samples from each discrete soil interval at each location will be placed in 4-ounce glass jars supplied by a laboratory, labeled, and placed in coolers with cold pack for transportation to a laboratory. Samplers will wear disposable latex gloves, changing gloves between each sampling interval.

Liquid samples will be placed in untreated plastic quart jars supplied by a laboratory, labeled, and placed in coolers with cold pack for transportation to a laboratory.

## 4.3 Sample Analysis

The laboratory will be instructed to analyze only the first 0" to 6" soil sample interval.

The second and third intervals will be analyzed to determine the extent of vertical contamination for each sample from the first interval for which analytical results show target constituents above Closure Performance Standards. Information gained from this analysis will be used to implement the Soil Removal and/or Disposal Section of this Closure Plan.

Analytical Method 6010 specified in 'EPA Publication SW-846 "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods" will be used to evaluate all samples, including two (2) rinsate samples from the waste chromic acid tank and containment area, one (1) wash/rinse sample from the chromium hydroxide sludge storage area, one (1) duplicate rinse sample, one (1) trip blank, one (1) field blank, two (2) equipment rinse samples from auger decontamination, two (2) equipment rinse samples from wet vacuum decontamination, eighteen (18) soil samples from the chromium hydroxide sludge storage area, six (6) soil samples from two locations underlying the chromic acid tank contaminant area, and three (3) duplicate soil samples (10%) for Quality Assurance/Quality Control.

Chain-of-custody documents will be completed and retained for all samples.

## 4.4 Soil Removal/Disposal

Analytical results of soil samples indicating the presence of target compounds above Closure Performance Standards will prompt development of a plan to excavate soil. Volumes of soil will be calculated based on the sample results.

Soil will be excavated, placed in suitable transport containers, and managed as hazardous waste in accordance with all applicable federal, state, and local regulations.

Concrete that cannot be decontaminated will be broken up and managed in a similar manner. Concrete overlying soil that requires removal will also be removed and managed as hazardous waste.

## 5.0 CLOSURE COST ESTIMATE

The work involved to ensure proper closure of the hazardous waste management units is dependent on the degree of contamination potentially present in and around the unit structures. The closure cost estimate is maximized by predicting a reasonable maximum extent of contamination. The associated closure activities involve removal and disposal of waste, containerizing and testing of rinsates, rinsate disposal, and testing, removal, and disposal of concrete and soil. Engineering services for closure observation and certification are included also. The closure cost estimate is made without regard to services that may be provided by the Fansteel/Wellman Dynamics facilities or personnel.

Waste Chromic Acid Storage Tank and Containment

| | | |
|---|---|---|
| Triple rinse of tank and containment area, including labor and equipment: Power washer and operators with protective gear at @ $100.00 for 4 hours..... | $ | 400.00 |
| Concrete coring in two locations and soil sampling, including labor, core drill, stainless steel auger, and equipment decontamination ..... | $ | 600.00 |
| Engineering direction, observation, and recordkeeping for closure, including tank and containment cleaning, sampling of tank rinsate, containment rinsate, soil sampling, and sample management ..... | $ | 1,100.00 |

Sample Analysis

| | | |
|---|---|---|
| Total chromium, maximum of 6 soil samples, plus one duplicate soil sample @$35 | $ | 245.00 |
| Total chromium, two rinsate samples, plus two equipment blanks @$35 | $ | 140.00 |
| pH measurement of all samples (7 soil and 4 water) @$25 | $ | 275.00 |
| Soil Removal - 10 cubic yards | | |
| - Labor and equipment: Soil excavation at $85.00 per hour. | $ | 680.00 |
| - Container: $350.00 per month. | $ | 350.00 |
| - Disposal as hazardous waste at permitted facility: $3200.00 transportion, $0.15/lb for disposal. | $ | 7,700.00 |
| Rinsate Disposal | | |
| - 1,000 Gallons as hazardous waste at permitted facility (first and second rinses). | $ | 900.00 |

Chromic Hydroxide Drum Storage Area

| | | |
|---|---|---|
| Concrete decontamination, including labor and equipment: Power washer and operator with protective gear at @ $100.00 for 4 hours | $ | 400.00 |
| Concrete coring in three locations and soil sampling, including labor, core drill, stainless steel auger, and equipment decontamination | $ | 600.00 |
| Engineering direction, observation, and recordkeeping for closure, including pad cleaning, sampling of rinsate, soil sampling, and sample management | $ | 1,100.00 |

Sample Analysis

| | | |
|---|---|---|
| Total chromium, maximum of 18 soil samples, plus two duplicate soil sample @$35 | $ | 700.00 |
| Total chromium, two rinsate samples, plus two equipment blanks @$35 | $ | 140.00 |
| pH measurement of all samples (20 soil and 4 water) @$25 | $ | 600.00 |

Soil Removal - 10 cubic yards

| | | |
|---|---|---|
| - Labor and equipment: Soil excavation at $85.00 per hour | $ | 680.00 |
| - Container: $350.00 per month | $ | 350.00 |
| - Disposal as hazardous waste at permitted facility: $3200.00 transportion, $0.15/lb for disposal | $ | 7,700.00 |

Concrete Removal - 24 cubic yards

| | | |
|---|---|---|
| - Labor and equipment: Breaking and excavation at $85.00 per hour | $ | 680.00 |
| - Container: $350.00 per month | $ | 350.00 |
| - Disposal as hazardous waste at permitted facility: $3200.00 transportion, $0.15/lb for disposal | $ | 17,200.00 |

Trip Blanks and Field Blank Analysis:

| | |
|---|---|
| Total chromium, one trip blank and two field blanks @$35 | $ 105 |
| pH measurement of one trip blank and two field blanks @$25 | $ 75.00 |
| Closure Certification and Report | $ 2,900.00 |
| TOTAL: | $ 45,970.00 |

## 6.0 CLOSURE SCHEDULE

| ACTIVITY | EXPECTED COMPLETION FROM DATE OF CLOSURE PLAN APPROVAL BY EPA |
|---|---|
| Written notification to EPA of intention to carry out closure plan. | Day 1 |
| Waste removal from tank. | Day 30 |
| Tank cleaning, rinsing, sampling. | Day 40 |
| Concrete pad cleaning, rinsing, sampling. | Day 41 |
| Analytical results received. | Day 70 |
| Soil excavated (if needed). | Day 80 |
| Concrete removed (if needed). | Day 90 |
| Provide engineer's final inspection and certification of Closure Report. | Day 120 |
| Submittal to EPA. | Day 125 |

## 7.0 CLOSURE PLAN AMENDMENT

If modifications of the Closure Plan become necessary at any point during the closure procedures, an amended Closure Plan will be submitted within 30 days of discovery of the event causing the change. The amended Closure Plan will reflect any change in operation, costs, or scope. The closure process will not proceed until EPA approval of the amendment is received, in accordance with 40 CFR 265.112(c).

## 8.0 POST CLOSURE PLAN

Fansteel/Wellman Dynamics will continue to operate as a generator of hazardous waste after implementation of the Closure Plan. The facility will comply with all applicable regulations for management of this waste.

No circumstances are expected to evolve from the closure process that would require a Post-Closure Plan.

## 9.0 NOTIFICATION

Fansteel/Wellman Dynamics will provide written notification to EPA at least thirty (30) days prior to any sampling activities. This will allow an EPA representative to be on-site to witness sampling to verify clean closure and to obtain split or duplicate samples, if necessary.

## 10.0 CLOSURE CERTIFICATION

All closure procedures will be conducted under the supervision of an independent, registered professional engineer. Photographs of key activities will be taken and a daily log book kept with descriptive commentary. In accordance with 40 CFR 264.115, information that will be included in the closure report: Certification statements from the facility owner/operator and an independent registered professional engineer; detailed description of all closure activities; photographs of the waste management units prior to closure, of decontamination and sampling activities during closure; and of the units when closure has been completed, sample analytical results with laboratory QA/QC results, and manifests documenting removal of waste from the units; if applicable.

An independent, professional engineer will evaluate analytical results by comparing reports with the closure performance standards defined under Section 3.0. If material testing indicates compliance with the closure standards, the closure will be certified as clean. Noncompliance with standards will result in an amendment to the Closure Plan or development of a Post-Closure Plan to address the issue.

Written certification of closure will be submitted to EPA when all waste has been removed and site decontamination is complete. Certification will be made by registered mail to EPA Region VII that the hazardous waste management units have been closed in accordance with the specifications and procedures set forth in the Approved Closure Plan.

# APPENDIX

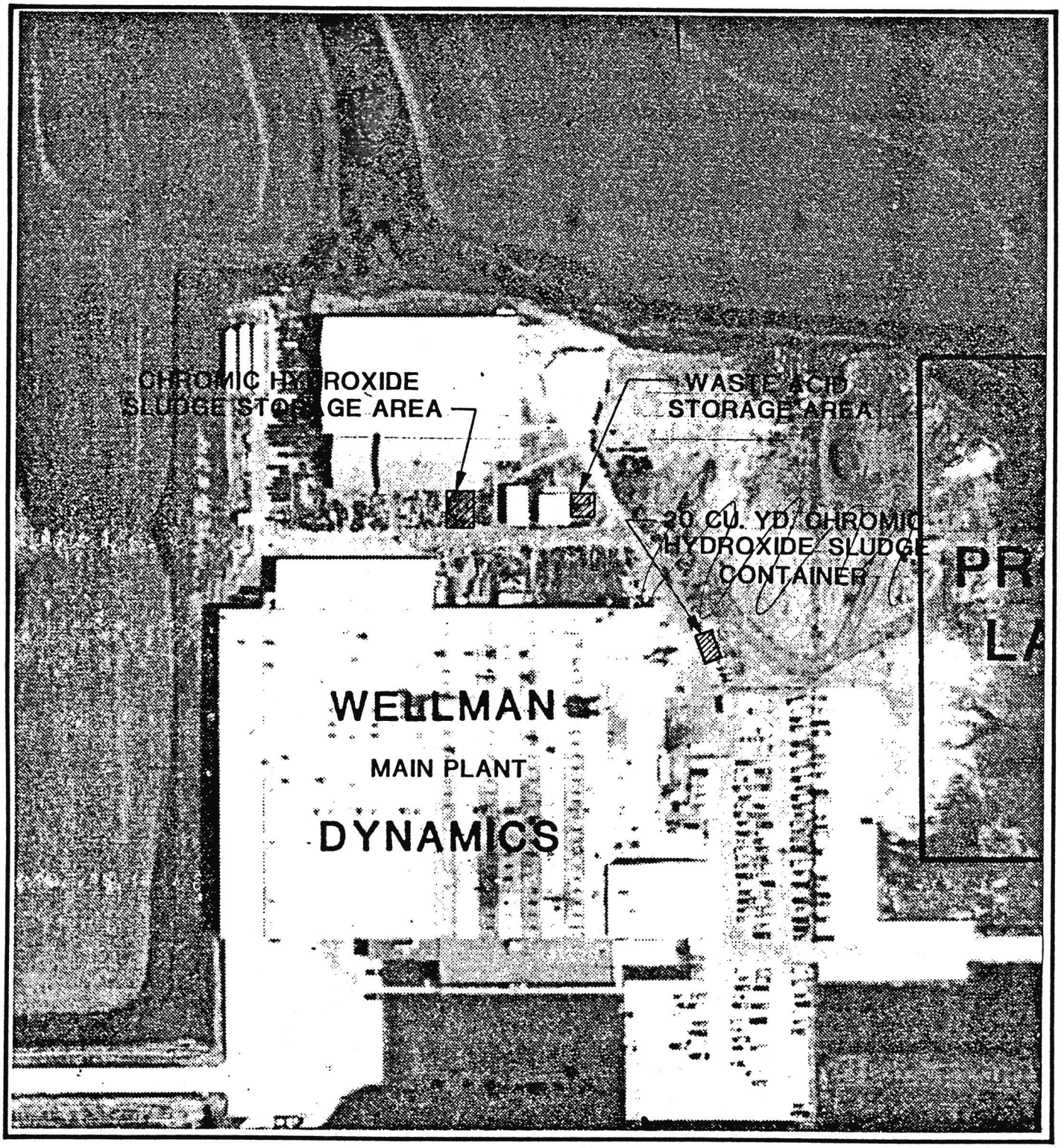



FIGURE 1

# SITE PLAN

## CLOSURE PLAN

## FANSTEEL/WELLMAN DYNAMICS

## CRESTON, IOWA

Howard R. Green Company
CONSULTING ENGINEERS

549050

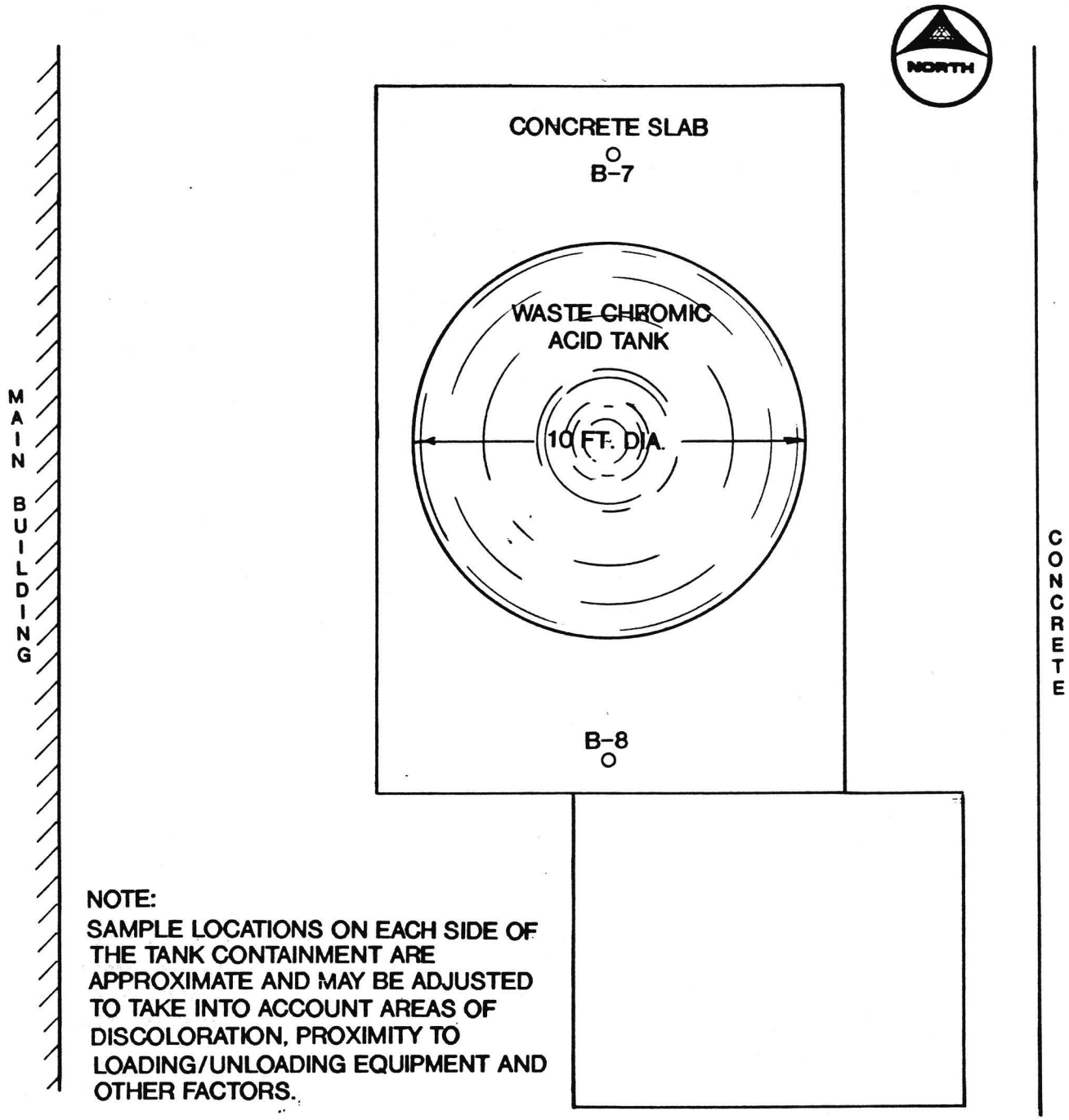



FIGURE 2

# PROPOSED SAMPLE LOCATIONS WASTE CHROMIC ACID TANK

FANSTEEL/WELLMAN DYNAMICS

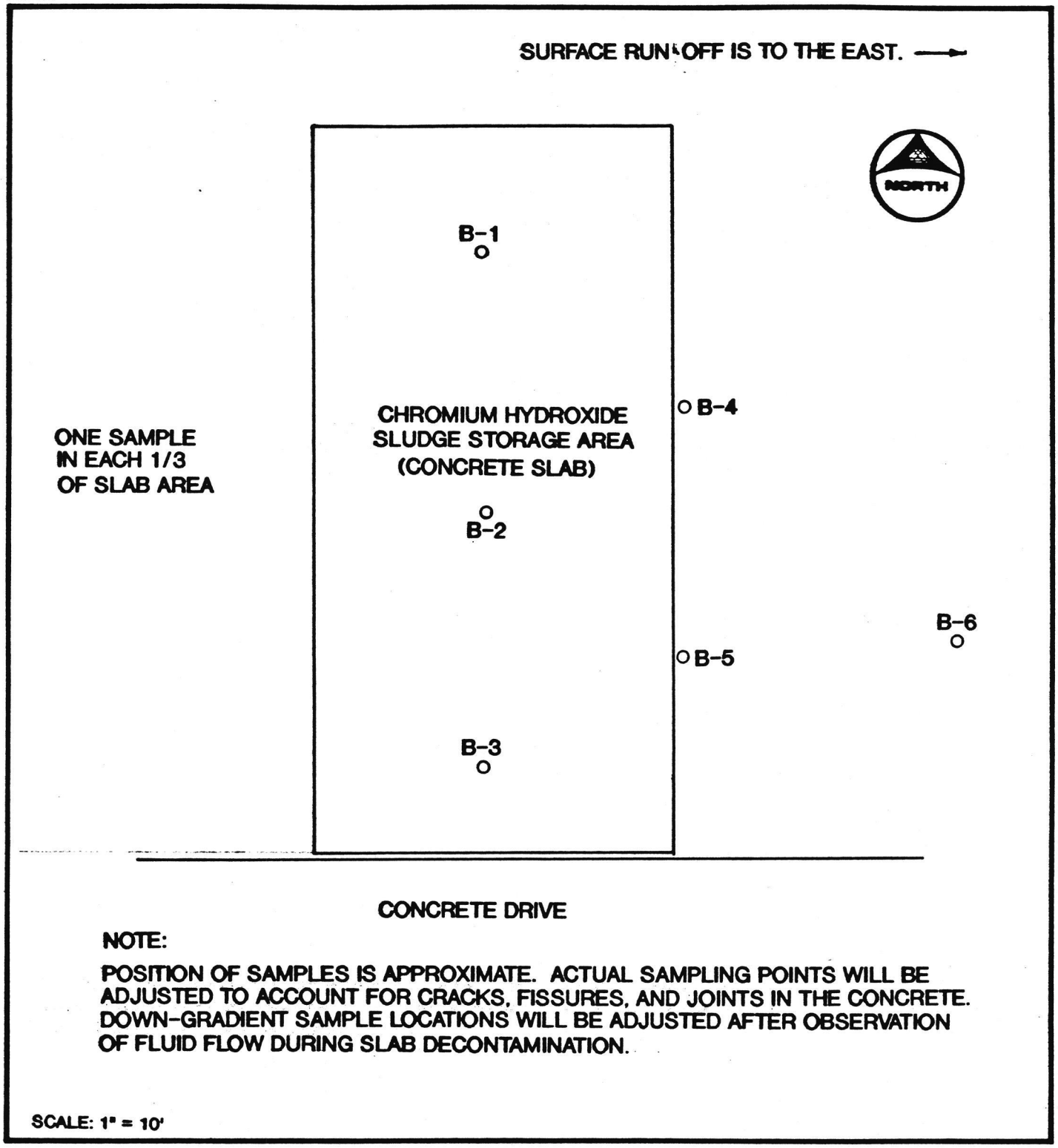
CRESTON, IOWA

JULY, 1992

Green Environmental Services, Inc.

DCK 711170-J-0587

549050




NOTE:

POSITION OF SAMPLES IS APPROXIMATE. ACTUAL SAMPLING POINTS WILL BE ADJUSTED TO ACCOUNT FOR CRACKS, FISSURES, AND JOINTS IN THE CONCRETE. DOWN-GRADIENT SAMPLE LOCATIONS WILL BE ADJUSTED AFTER OBSERVATION OF FLUID FLOW DURING SLAB DECONTAMINATION.

SCALE: 1" = 10'

# FIGURE 3
# PROPOSED SAMPLE LOCATIONS
# CHROMIUM HYDROXIDE SLUDGE STORAGE AREA

FANSTEEL/WELLMAN DYNAMICS
CRESTON, IOWA
JULY, 1992

Green Environmental Services, Inc.

DCK 711170-J-0587